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Emcore Corporation  
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EXAMINER
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BARTON, JEFFREY THOMAS

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1795

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/773,343  
Filing Date: February 06, 2004  
Appellant(s): SHARPS ET AL.

**MAILED  
OCT 12 2007  
GROUP 1700**

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Samuel Borodach  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 10 July 2007 appealing from the Office  
action mailed 06 March 2007.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The following are the related appeals, interferences, and judicial proceedings known to the examiner which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal:

An Appeal to the Board of Patent Appeals and Interferences has been filed in connection with U.S. Patent Application No. 10/723,456.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is substantially correct. The changes are as follows:

**WITHDRAWN REJECTIONS**

The following grounds of rejection are not presented for review on appeal because they have been withdrawn by the examiner.

The rejection of claims 47 and 69 under 35 U.S.C. §102(b) as anticipated by JP 9-64397.

The rejection of claim 47 under 35 U.S.C. §102(b) as anticipated by Ho et al.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

No evidence is relied upon by the examiner in the rejection of the claims under appeal.

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 37, 47, and 69 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claim 37, there is no support in the specification as originally filed for a bypass device having p-type, i-type, and n-type layers, wherein the bypass device and a subcell of a multijunction cell have an identical sequence of layers with substantially the

same thickness and composition. The embodiment disclosed in figures 1-5 and paragraphs [0025]-[0052] teaches no intrinsic layer in the bypass device, while the embodiment disclosed in figures 6-9 and paragraphs [0053]-[0077] does not disclose that the bypass device (622-624-626) can have a sequence of layers identical to any subcell of the multijunction cell. There is no teaching of a p-i-n cell anywhere in the specification as filed.

In claim 37, at lines 6-7, the “substantially the same composition and thickness” limitation is not supported by the specification, as originally filed.

In claim 47, at line 11, the “substantially the same composition and thickness” limitation is not supported by the specification, as originally filed.

In claim 69, at lines 14-15, the “substantially the same composition and thickness” limitation is not supported by the specification, as originally filed.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 37, 47, and 69 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 37, at line 6, it is not clear what is to be encompassed by the term “substantially the same composition and thickness”. The same applies to dependent claims 38-46.

In claim 47, at lines 11-12, it is not clear what is to be encompassed by the term "substantially the same composition and thickness".

In claim 69, at lines 14-15, it is not clear what is to be encompassed by the term "substantially the same composition and thickness".

#### **(10) Response to Argument**

(A *Concerning the rejections of claims 37, 47, and 69 under 35 U.S.C. §112, first paragraph due to the language "substantially the same composition and thickness".*

Appellant argues that the original specification supports the term "substantially the same composition and thickness" in that one having ordinary skill in the art would have read the original language, in which the deposited semiconductor layers can be characterized as having "the same" composition and thickness, as inherently involving small variations in composition and thickness, resulting in layers that are "substantially the same".

The examiner agrees that in any deposited layers, small variations in composition and thickness will occur across the deposited film. However, this does not justify the addition of broadening language that is not supported in the original specification.

Note that no particular part of the specification is indicated as supporting this broadened language in Appellant's arguments. The Examiner points to Figure 5 and its discussion in the specification (Page 9, line 24 - Page 10, line 5) as containing pertinent disclosure. A single sequence of layers, each having a defined composition is

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deposited on the Ge substrate, and mesa etch 501 effectively divides this sequence of layers into the bypass device 106 and cell junctions 105. The layers on either side of this etch are reasonably considered to be the same, i.e. having the same composition and thickness, since they are deposited at the same time under the same conditions and were originally continuous layers. Of course, minor variations would inherently be present in any deposited layers, which would be recognized by one of ordinary skill in the art, and which would be included in the scope of a claim reciting "the same composition and thickness".

The addition of the unsupported term "substantially" broadens the claims beyond the scope of the original disclosure in that it adds room for interpretation beyond that that would have been recognized by a skilled artisan reading the original specification. Appellant is essentially arguing that relative to the composition and thickness of a deposited layer, "the same" carries precisely the same meaning as "substantially the same", which is clearly not reasonable. One might similarly argue that "approximately the same composition and thickness" or "of similar composition and thickness" is supported by the original disclosure, since any deposited layer will have variations in composition and thickness over the deposited area.

Appellant argues that a lack of literal support is not enough to support a rejection under 35 U.S.C. §112, first paragraph. This is of course true. However, as argued above, the addition of the term "substantially" broadens the claims beyond the scope of the original disclosure in that it adds room for interpretation beyond that that would have been recognized by a skilled artisan reading the original specification. This is not a

mere matter of lack of literal support for inherent disclosure, but clear broadening of the original disclosure.

Appellant argues that the declaration and disclosure demonstrate that Appellant was in possession of the claimed invention at the time the application was filed. The Examiner respectfully disagrees. The scope of the instant claims, which require each layer in the bypass device or first region to have "substantially the same composition and thickness" as the corresponding layer in the subcell or second region is broader than the original disclosure, which exclusively discloses these corresponding layers as being the same, i.e. deposited as a single layer and subsequently divided into separate regions.

Appellant argues that the declaration has been dismissed without adequate reason to rebut. This is simply not true. The reasons why the term "substantially" constitutes new matter have been presented in the previous rejections and above.

*(B) Concerning the rejection of claim 37 under 35 U.S.C. §112, first paragraph due to the language "a bypass device . . . having p-type, l-type, and n-type layers".*

Appellant argues that Figure 6 of the specification provides support for the limitations "a bypass device integral to a subcell . . . having p-type, i-type, and n-type layers" and "wherein the bypass device and the subcell have an identical sequence of semiconductor layers", basically arguing that layers 604, 606, and 608 can be considered part of the bypass device. The examiner does not believe this is a reasonable interpretation of the claim or instant Figure 6.



The claim requires "a bypass device integral to a subcell", which would be read by a skilled artisan as indicating that the bypass device and subcell are separate portions of an integral structure. Three subcells are present beneath bypass diode 620 and layers 612 and 610 in Figure 6, and if the bypass device is recited as being "integral" to one or more of these, the bypass device cannot reasonably be considered to include any such cell. The claim would be requiring a structure to be integral to itself. Therefore, the Examiner believes that the bypass device cannot include cells 608, 606, and/or 604 that lie beneath the bypass diode.

Furthermore, the claim requires the bypass device to be "for passing current when the solar cell is shadowed". It is clear from the structure of Figure 6 and the related disclosure at Page 13, line 25 - Page 14, line 14 that when the structure of Figure 6 is shadowed, no current will pass through the layers 604, 606, and 608 that lie beneath diode 620. Shunt 630, which is highly conductive, is provided specifically so that current will be passed from substrate 602 directly to conduction layer 610 when the cell is shadowed, effectively bypassing layers 604, 606, and 608. Since the layers 604, 606, and 608 do not pass current when the cell is shadowed, it is not clear how they can be considered part of "a bypass device . . . for passing current when the solar cell is shadowed".

For these reasons, the Examiner maintains that the instant bypass device is reasonably construed to consist of layers 622, 624, 626, 612, 610, and 630, which are integral to subcells 604, 606, and 608, which pass current when the cell is shadowed, and which include p-type, l-type, and n-type layers (622, 624, and 626) as required in

the instant claim language. No portion of this structure is disclosed in the instant specification as having a sequence of layers identical to that of a subcell.

*(C) Concerning the rejections of claims 37, 47, and 69 under 35 U.S.C. §112, second paragraph*

Appellant argues that the term "substantially" has been found to be definite, citing numerous precedents, and argues that the citing of "two to three percent" variation in composition and thickness in the declaration further renders the recitation definite.

The Examiner certainly acknowledges that the mere presence of the term "substantially" does not in and of itself render a claim indefinite. However, the term "substantially" has been added to the instant claims after original filing, without any corresponding indication of the type of variation contemplated in the specification. There is no basis present for determining how close to "the same" layer thicknesses must be to be "substantially the same". The declaration cites two to three percent variation, but this does not take the place of original disclosure for determining the scope of the instant claims.

Appellant argues that the term "substantially" is rendered definite by "the specified normal range of up to two to three percent variations" in the declaration. The Examiner notes that there is no description of such a "normal range of up to two to three percent variations" in the specification as filed, and the designation of two to three percent variation in a declaration does not render the claim language definite. There is no basis in the specification as filed for interpretation of the unsupported term

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"substantially", and the claims are therefore not properly defined. Further, Appellant's declaration simply states what variations are normal and well within manufacturing specifications for actual commercial products. The declaration does not state that two to three percent variations are the art standard for "substantially the same thickness and composition" or if variations of five or even ten percent can still be considered as "substantially the same thickness and composition". As there are no limits to the variations disclosed by the specification, there are no corresponding limits for the claims. Therefore it does not allow one of ordinary skill to determine the scope of the claims.

*(D) and (E) Concerning the rejections based on prior art documents*

These grounds of rejection have been withdrawn, as indicated above.

**(11) Related Proceeding(s) Appendix**

A pending Appeal in U.S. Patent Application No. 10/723,456 is related to this Appeal. No decision has yet been rendered by the Board in this case.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Jeffrey T. Barton

Conferees:

Romulo Delmendo

*Appeals Specialist*

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A handwritten signature in black ink, appearing to read 'Nam Nguyen', with a large, stylized loop at the end.

Nam Nguyen